AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for rapid refrigeration at a useful temperature T_U which employs a thermochemical system based on the coupling of reversible physico-chemical phenomena between a gas and a solid or liquid sorbent,

said physico-chemical phenomena comprising a LT phenomenon and a HT phenomenon, each of the LT phenomenon and the HT phenomenon being exothermic in one direction and endothermic in the other direction, ~~called the LT phenomenon and the HT phenomenon,~~

said physico-chemical phenomena being such that, at a given pressure, the equilibrium temperature of the LT phenomenon is below the equilibrium temperature of the HT phenomenon,

said method comprising carrying out at least one cycle consisting of a refrigeration step and a regeneration step starting from an initial state in which a reactor in which the LT phenomenon occurs and a reactor in which the HT phenomenon occurs are at the ambient temperature and isolated from each other,

the refrigeration step consisting of the endothermic phase of the LT phenomenon, which releases a refrigerant fluid G in gas form,

the regeneration step consisting of the endothermic phase of the HT phenomenon, which releases the fluid G in gas form,

wherein in said method:

- the LT phenomenon is a liquid/gas phase change of the fluid G or an absorption of the fluid G by a liquid sorbent;
- the HT phenomenon is a sorption of the fluid G by a liquid or solid sorbent;
- the endothermic phase of the LT phenomenon takes place in a reactor thermally isolated from the ambient environment; ~~and~~
- the exothermic phase of the LT phenomenon takes place in a condenser in permanent

communication with the reactor in which the HT phenomenon takes place, the condensed fluid G then being transferred into the reactor in which the endothermic phase of the LT phenomenon takes place;

- the refrigeration step consisting of the endothermic phase of the LT phenomenon, which releases a refrigerant fluid G in gas form, comprises:
    - a phase A1 during which the reactor in which the HT phenomenon takes place and the reactor in which the LT phenomenon takes place are placed in communication with each other; and
    - a phase A2 during which the HT and LT reactors are isolated from each other and the HT reactor is heated; and
- the regeneration step consisting of the endothermic phase of the HT phenomenon, which releases the fluid G in gas form, comprises:
    - a phase C during which the HT reactor is heated and in permanent communication with a condenser, said condenser being isolated from said reactor in which the LT phenomenon takes place during at least part of phase C;
    - a phase D consisting in transferring the fluid G in liquid form from the condenser to the LT reactor; and
    - a phase E consisting in cooling the HT reactor in order to return it to the initial conditions.

2. (Cancelled)

3. (Currently Amended) The method as claimed in claim 1 [[2]], implemented for ice production, wherein it comprises, between passive refrigeration phase A2 and phase C of the regeneration step, an intermediate phase B for separating ~~the~~ pieces of ice from ~~the~~ a support.

4. (Currently Amended) The method as claimed in claim 3, wherein phase B consists in bringing the condenser into communication with the LT reactor for a short period

so as to bring some of ~~the~~ a hot gas released by the endothermic step of the HT reactor into proximity with the support on which the pieces of ice form.

5. (Previously Presented) The method as claimed in claim 3, wherein phase B is implemented using electrical resistance elements integrated into or attached to the wall of the LT reactor, or in the reactor BT, near the ice support.

6. (Currently Amended) `The method as claimed in claim 1 [[2]], wherein, during ~~step~~ phase A1, the heat generated by the exothermic step in the HT reactor is extracted.

7. (Cancelled)

8. (Previously Presented) The method as claimed in claim 1, wherein the reactor in which the HT phenomenon takes place and the condenser are permanently in communication with each other.

9. (Currently Amended) A device for implementing rapid refrigeration at a useful temperature T_U which employs a thermochemical system based on the coupling of reversible physico-chemical phenomena between a gas and a solid or liquid sorbent ~~the method as claimed in claim 1~~, wherein the device comprises:

- a first reactor and a second reactor and a condenser provided with means for extracting the heat;
- ~~the second reactor is connected to the condenser via a second line provided with a valve;~~
- the condenser is connected to the first reactor via a first line;
- the second reactor is connected to the condenser via a second line provided with a valve;
- the first reactor is provided with heating means and with means for extracting the heat, ~~and it contains~~ said first reactor containing a liquid or solid sorbent capable of reversibly sorbing a refrigerant fluid G; and
- the second reactor includes means for thermally isolating [[it]] said second reactor

from the ambient medium, and ~~it contains~~ said second reactor containing the liquid form of the refrigerant fluid G or a liquid sorbent capable of absorbing the refrigerant fluid G.

10. (Currently Amended) The device as claimed in claim 9, wherein the device [[it]] further includes a third line provided with a valve that connects the first reactor directly to the second reactor.

11. (Previously Presented) The device as claimed in claim 9, wherein the second reactor is an evaporator.

12. (Previously Presented) The device as claimed in claim 9, wherein the second reactor is an evaporator provided with an ice tray.

13. (Previously Presented) The device as claimed in claim 12, wherein the ice tray forms an integral part of the evaporator.

14. (Currently Amended) The device as claimed in claim 12, wherein the ice tray is fixed to or placed on a wall of the evaporator that is in contact with ~~the~~ a boiling refrigerant fluid, directly or via fins.

15. (Previously Presented) The device as claimed in claim 13, wherein the evaporator is formed by two hollow sections that have different concavities and are joined together along their longitudinal edges, the section having the smaller concavity being placed above the section having the larger concavity, the respective concave parts being upwardly directed, the section having the smaller concavity forming the ice tray and the section having the larger concavity forming the reservoir for the refrigerant fluid.

16. (Previously Presented) The device as claimed in claim 15, wherein the concavities are formed by portions of circular or elliptical arcs of different diameters, the sections being portions of longitudinally truncated tubes of cylindrical or elliptical cross-section.

17. (Previously Presented) The device as claimed in claim 15, wherein the sections are in contact with each other along their lower generatrices.

18. (Previously Presented) The device as claimed in claim 12, wherein the ice tray is divided into compartments by partitions.

19. (Previously Presented) The device as claimed in claim 18, wherein the partitions are hollow and contain a phase change material.

20. (Previously Presented) The device as claimed in claim 15, wherein the lower section is provided with cells filled with a phase change material.

21. (Previously Presented) The device as claimed in claim 18, wherein the partitions include notches.

22. (Previously Presented) The device as claimed in claim 15, wherein fins are placed in the space between the two sections.

23. (Previously Presented) The device as claimed in claim 22, wherein the fins are hollow and contain a phase change material.

24. (Previously Presented) The device as claimed in claim 14, wherein:

- the ice tray is formed by a container ;
- said container is provided with a thermal insulation placed around its periphery;
- said container is removable and fits onto the lower part of the evaporator, which also includes a thermal insulator ;
- the evaporator is provided with external fins that are immersed in the ice tray and with internal fins ; and
- the evaporator is provided with a pipe for connecting it to the rest of the device.